CLAIMS

Having thus described the invention, what we desire to claim and secure by letters patent is:

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A load bearing strut formed primarily of a reinforced plastic composite and reacting tension and compression loading as well as minimizing effects of edge bearing and shear loading, said strut comprising:

a) an elongate section comprised of a reinforced composite material;

b) at least one relatively flat end section on an end of said elongate section; and

c) a load transfer insert in said end section formed of a quasi-isotropic material surrounded by a fiber reinforcing strip and having a portion therein for conducting load transference, such that the laminate reacts compression loads and the fiber reinforcing strip reacts tension loads and reducing load which would result in edge bearing and shear.

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The load bearing strut of Claim 1 further characterized in that said end section has a shape different than that of said elongate

section and having portions which merge into a shape of the elongate section so that the two sections become effectively contiguous.

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The load bearing strut of Claim 1 further characterized in that said elongate section has a cylindrically shaped portion for a substantial portion of its length and that said end section is a relatively flat plate.

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The load bearing strut of Claim 3 further characterized in that said end section has a pair of relatively flat oppositely disposed surfaces and a section which merges into a cylindrically shaped elongate section.

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The load bearing strut of Claim 1 further characterized in that said load transfer insert has a somewhat oval shape with a pair of opposite flat surfaces and that the portion therein for conducting load transference is located closer to one end of said oval-shaped portion.

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The load bearing strut of Claim 1 further characterized in that said strut is covered by an outer layer of fiber reinforcing

material such that the elongate section and the end section are covered by the fiber reinforcing material wound thereabout.

A load bearing strut formed primarily of a reinforced plastic composite material and capable of reacting tension and compression loads while minimizing the effects of edge bearing and shear loading, said strut comprising:

a) an elongate section having a rounded portion thereon and being comprised of at least a reinforced composite material;

b) at least one relatively flat end section on said elongate section and having a portion which merges into the rounded shape of said elongate section and also a relatively flat plate-like section thereon and which plate-like section has flat opposed surfaces; and

c) a load transfer insert in said end section and having an insert core surrounded by fiber reinforcing material, said load transfer insert also having a portion therein adjacent one end portion thereof for conducting load transference, such that the laminate reacts compression loads and the fiber reinforcing strip reacts tension loads while reducing loads which would result in edge bearing and shear.

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The load bearing strut of Claim 7 further characterized in that said end section has a shape different than that of said elongate section and having portions which merge into a shape of the elongate section so that the two sections become effectively contiguous.

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The load bearing strut of Claim 1 further characterized in that said opposite faces of said end portion are formed of an insert core material and said end section is provided with a peripheral band of reinforcing material wound thereon.

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The load bearing strut of Claim 7 further characterized in that the entire strut is wound with filament reinforcing material.

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A process for producing a load bearing strut capable of reacting to tension and compression loads while minimizing shear and edge bearing loads, said process comprising:

a) wrapping a peripheral edge of a preformed member with a filamentary reinforcing material to produce a load transfer insert;

b) locating said load transfer point in an end of an elongate member and with the elongate member and load transfer insert having the overall shape of the strut to be produced;

c) providing a load transfer insert in proximity to one end of said core; and

d) wrapping filament reinforcing material about said elongate member and said end of the elongate member having the load transfer insert therein to provide a load bearing strut.

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The process for producing the load bearing strut of Claim 11 further characterized in that the insert is somewhat oval shaped and the process comprises wrapping the filament in a somewhat oval pattern.

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The process for producing the load bearing strut of Claim 12 further characterized in that said insert is formed of a quasi-isostropic material.

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The process for producing a load bearing strut of Claim 12 further characterized in that said process comprises inserting said load transfer insert into an end plate secured to an elongate member, and winding filament reinforcing material about said end plate and said elongate portion.